User Manual

Allen-Bradley

ControlFLASH® Firmware Upgrade Software

Catalog Numbers ControlFLASH 12.00.00

Allen-Bradley • Rockwell Software

Rockwell Automation

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence
	SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

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Preface
Purpose of This Manual 5
What's New in ControlFLASH Software, version 11.00.00 5
Who Should Use This Manual 5
. 6

ControlFLASH Firmware Kit
Introduction 7
What are the System Requirements? 7
Before You Begin 7
. 7

Install the ControlFLASH Firmware Kit
Introduction 9
Locate and Download Firmware Bundles 9
Install the Firmware Kit 10

Configuring ControlFLASH Policy in FactoryTalk Policies
Introduction 15
Configure ControlFLASH Policy 15

Upgrade Firmware with ControlFLASH
Introduction 17
Prepare the Networks for Upgrades 17
Prepare the Device for Upgrades 17
Use the ControlFLASH Software to Upgrade Firmware 18
Access Online Help 25

Use the Command Line
Introduction 27
Command Line Mode 28
Command Line Syntax 28
Script Files 30
Flash Multiple Devices 31
Example Script File Text 33
Example Script File Text for Instance Number 33
Troubleshooting 34
Error Log 34
Aborted Script File 34
Stop a Command Line or Script Application 35

ControlFLASH and Factory Talk AssetCentre Interaction
Introduction 37
Information Monitoring 37
Event Log 37
Audit Log 37
FactoryTalk AssetCentre 38
Logging the Device Update Status 39
Logging the Exit of ControlFLASH 39

ControlFLASH Software Error Codes
Introduction 41

Create a Custom Interface to Process Firmware Downloads
Introduction 43
Example Automated Flash Tool 43
How a Custom Upgrade Tool Works 45
Example Visual Basic .NET Code 46

Preface

Purpose of This Manual

This manual describes how to use the ControlFLASH® software to upgrade device firmware.

What's New in ControlFLASH Software, version 12.00.00

ControlFLASH v12.00.00 includes the following new features:

- ControlFLASH v12.00.00 supports flashing PanelView 5000 using Large Packet (also known as connected messaging) service. If the target device supports connected messaging, ControlFlash uses the large packet service. If the target device does not support the large packet service, ControlFlash uses the standard packet service. If the target device does not support connected messaging, ControlFlash uses unconnected messaging.
- ControlFLASH v12.00.00 supports updating the firmware for the 1756-L71S controller and its partner module via the controller's USB port and also via an EtherNet module in the backplane.
- ControlFLASH v12.00.00 provides an easier way to determine what firmware releases are installed on your PC by viewing the Firmware Inventory dialog.
- Firmware kit installation is more firmware-centric, now showing a list of firmware releases to be installed.

Who Should Use This Manual

You should use this manual if you need to maintain firmware revisions. The following is a list of hardware that ControlFLASH supports:

- ControlLogix controllers, communication, digital, analog, and motion modules
- CompactLogix controller, communication, digital, analog, and motion modules
- FlexLogix controllers and communication modules
- PowerFlex 700S drives with DriveLogix controllers and communication modules
- SoftLogix5800 controllers - Kinetix 6000, Kinetix 2000, Kinetix 7000, and 8720MC servo drives, communication, and motion modules
- MicroLogix controllers
- PLC-5 controllers

You should also have the following knowledge:

- A basic understanding of networking concepts.
- A basic familiarity of RSLinx Classic software.

ControlFLASH Firmware Kit

Introduction

This chapter helps you get started with using the ControlFLASH Firmware Kit with your application.

It includes the following content:

- The firmware of devices to be upgraded.
- The ControlFLASH software (including supported drivers and online help), which you can use to quickly upgrade the firmware for your devices.

What are the System Requirements?

To use the ControlFLASH Firmware Kit, your system must be at this minimum configuration:

- Personal computer with a Pentium 4 processor with at least 1GB of RAM
- Microsoft Windows 7, Microsoft Windows Server 2008 R2 Standard Edition Service Pack 1 or later operating systems
- RSLinx Classic Lite software, or better

You need to have at least RSLinx Classic Lite software installed before you install ControlFLASH. The RSLinx software is a communication package that you use with a wide variety of Rockwell Automation software, applications, and hardware.

The ControlFLASH software uses RSLinx Classic Lite software to communicate over Data Highway Plus, DF1, DH485, ControlNet, DeviceNet, and Ethernet networks. To install and use RSLinx Classic Lite software, refer to the printed or online help that comes with your RSLinx software package. If the RSLinx software is already installed on your computer, you may not need to install it now.

Before You Begin

Before you start using the ControlFLASH Firmware Kit, you need to:

- Verify that you have a version of RSLinx software installed.
- Configure RSLinx software.
- Install and configure your communication interface card.
- Verify your communication interface card operates correctly.

Install the ControlFLASH Firmware Kit

Introduction

A version of ControlFLASH software is installed when you install RSLogix 5000 and Connected Components Workbench. A version is also included when you download firmware bundles from the My Support site at: http://support.rockwellautomation.com/firmware.asp.

To use this site, you must register a username and password, as well as provide a serial number of an RSLogix5000 product.

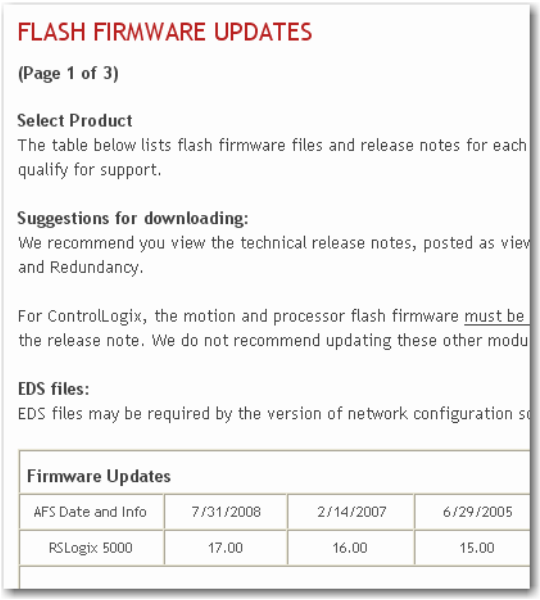
A downloaded bundle contains these files:

- Firmware to upgrade your devices
- ControlFLASH installation file
- ControlFLASH drivers
- ControlFLASH online help

Locate and Download Firmware Bundles

Before you start, you need to have a serial number for a RSLogix 5000 product. Follow these instructions to locate firmware bundles.

1. Go to http://support.rockwellautomation.com/firmware.asp.
2. Click **Control Hardware**. The **Flash Firmware Updates** page appears.


FLASH FIRMWARE UPDATES

(Page 1 of 3)

Select Product
The table below lists flash firmware files and release notes for each
qualify for support.

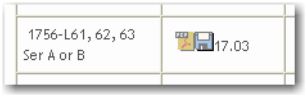
Suggestions for downloading:
We recommend you view the technical release notes, posted as viev
and Redundancy.

For ControlLogix, the motion and processor flash firmware must be
the release note. We do not recommend updating these other modu

EDS files:
EDS files may be required by the version of network configuration s

Firmware Updates			
AFS Date and Info	7/31/2008	2/14/2007	6/29/2005
RSLogix 5000	17.00	16.00	15.00

3. Scroll down to find the firmware bundle you need, for example, the 1756-L63, series A controller.



4. Click the disk icon.
5. Enter your serial number and click the **Qualify For Update** button.
6. After you have entered a qualified serial number, you will be able to download the firmware bundle.

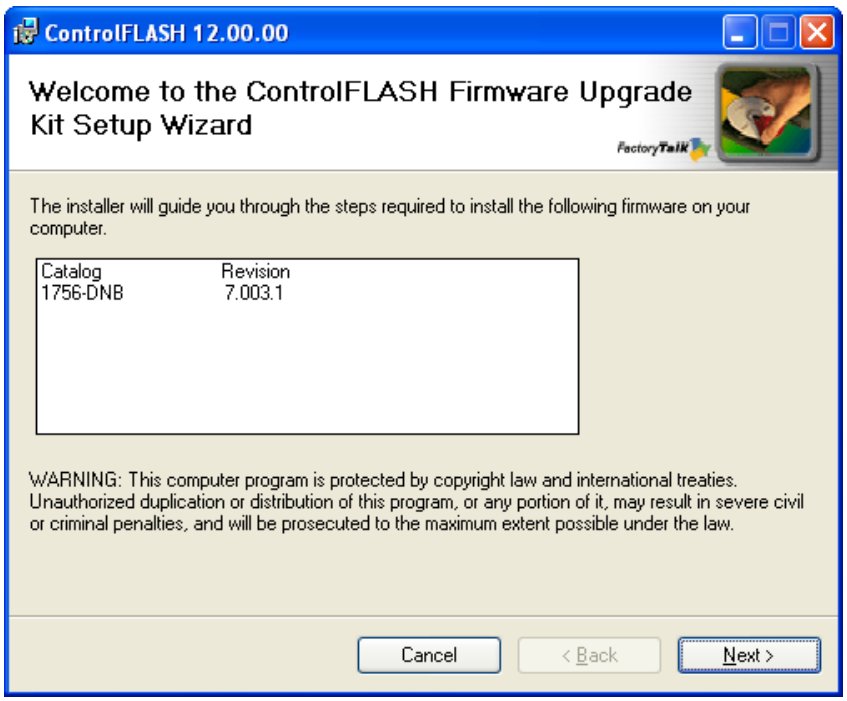
Install the Firmware Kit

If you have already downloaded and installed a firmware bundle, a version of ControlFLASH may already be on your machine. If the next firmware bundle you download has a newer version of ControlFLASH attached, then the newer version is installed. If you select a firmware bundle that has an older version of ControlFLASH attached, the newer version that is already installed remains. In all cases, any previously installed firmware remains accessible.

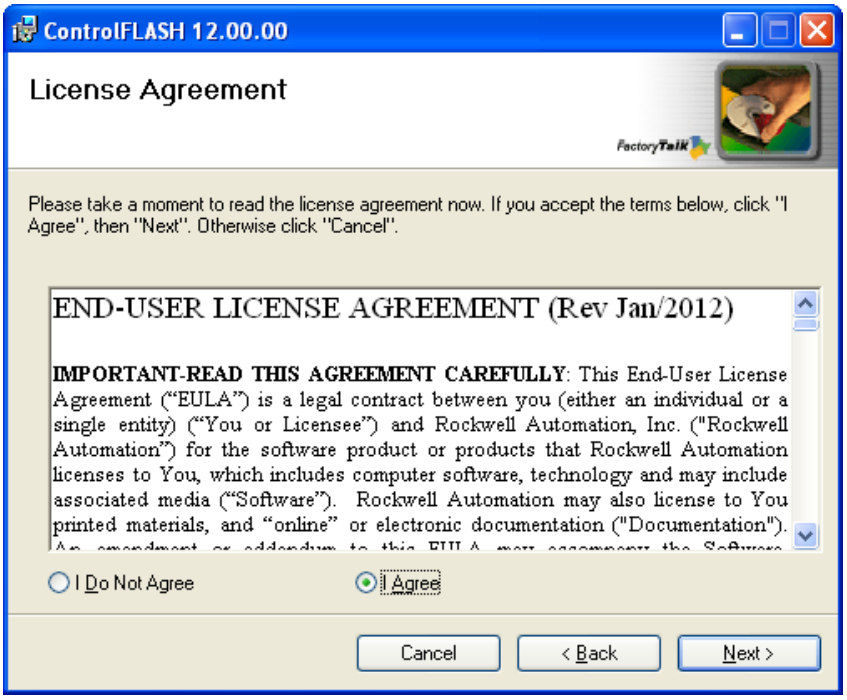
Follow these steps to install a ControlFLASH Firmware Kit.

IMPORTANT	The illustrations of the ControlFLASH software dialog boxes shown in this manual are samples. Because your system configurations or the firmware kits are different, the dialog boxes you see when running the tool may be different from the ones you see here.

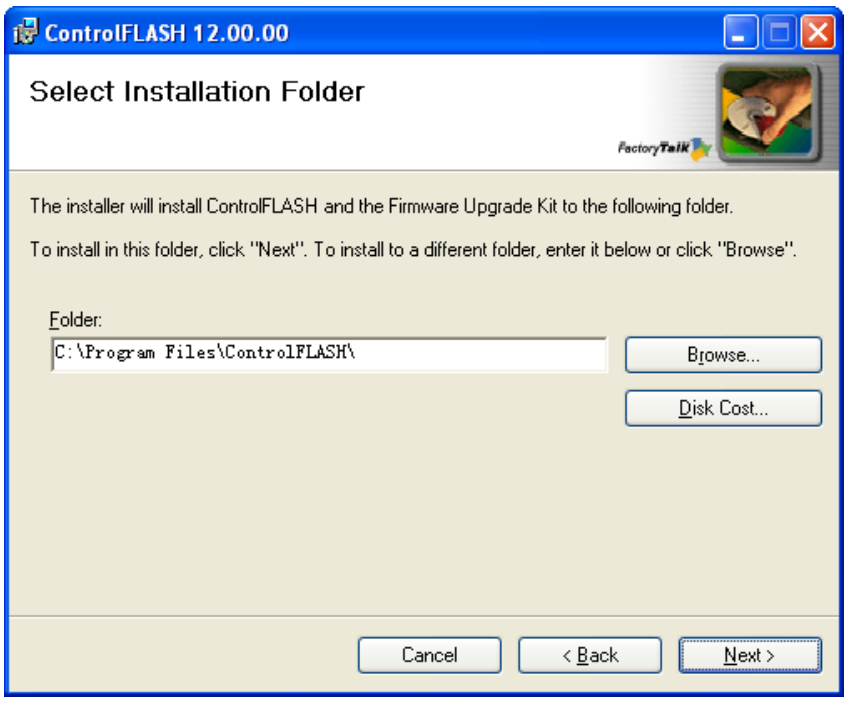
7. In the installation package, double-click ControlFLASH.msi. The Welcome dialog box appears. Click **Next**.


ControlFLASH 12.00.00
Welcome to the ControlFLASH Firmware Upgrade Kit Setup Wizard
FactoryTalk
The installer will guide you through the steps required to install the following firmware on your computer.
Catalog
1756-DNB
Revision
7.003.1
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

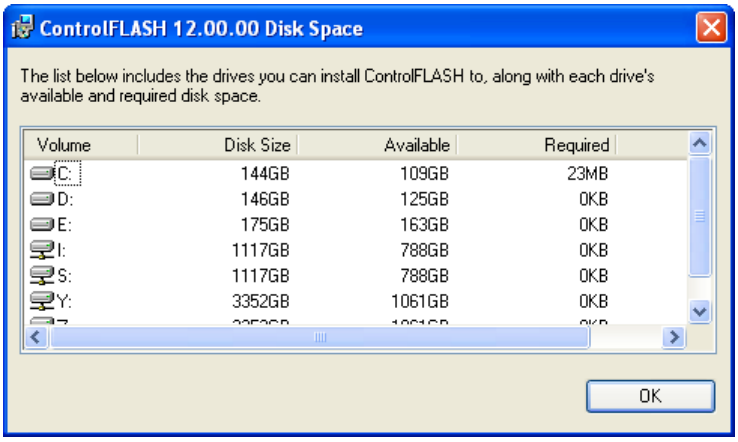
8. Read and agree to the license and click **Next**.


ControlFLASH 12.00.00
License Agreement
FactoryTalk
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
END-USER LICENSE AGREEMENT (Rev Jan/2012)
IMPORTANT-READ THIS AGREEMENT CAREFULLY: This End-User License Agreement ("EULA") is a legal contract between you (either an individual or a single entity) ("You or Licensee") and Rockwell Automation, Inc. ("Rockwell Automation") for the software product or products that Rockwell Automation licenses to You, which includes computer software, technology and may include associated media ("Software"). Rockwell Automation may also license to You printed materials, and "online" or electronic documentation ("Documentation").
I Do Not Agree
I Agree
Cancel
< Back
Next >

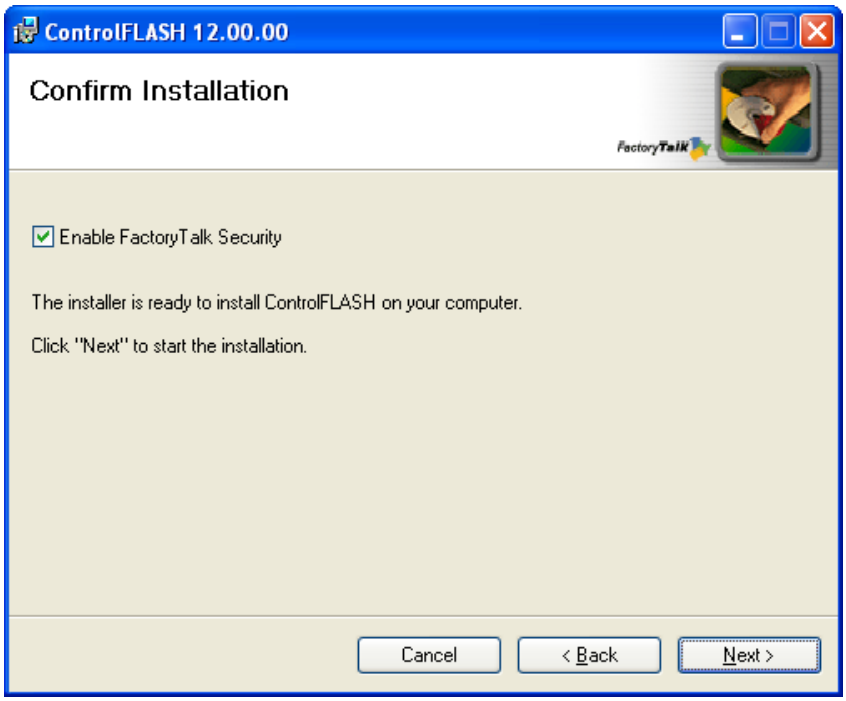
9. Click **Browse** to select the location of the installation. The default location is **C:\Program Files\ControlFLASH**. Click **Next** to continue.


ControlFLASH 12.00.00
Select Installation Folder
FactoryTalk
The installer will install ControlFLASH and the Firmware Upgrade Kit to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\ControlFLASH\
Browse...
Disk Cost...
Cancel
< Back
Next >

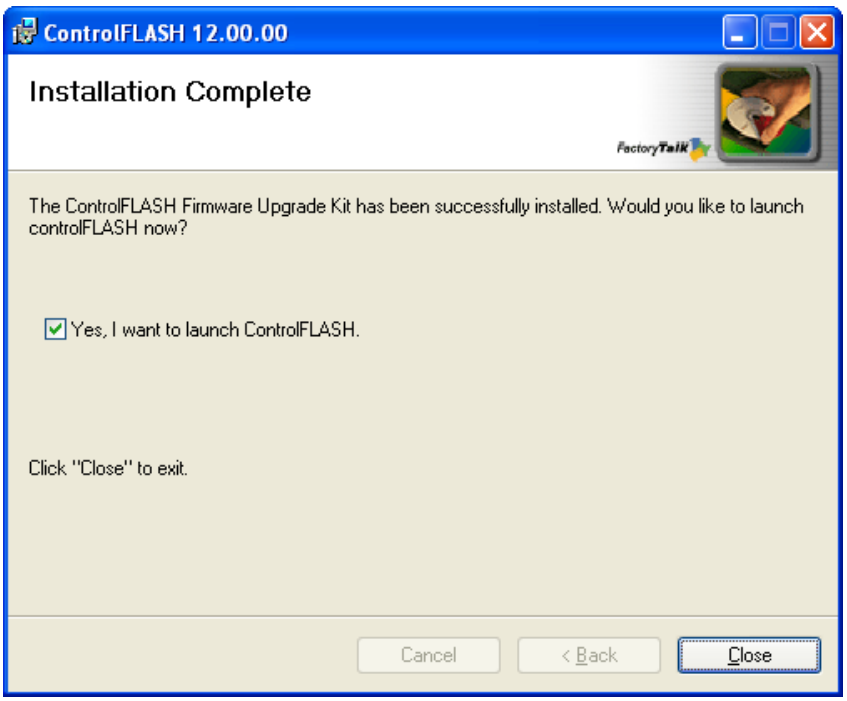
10. If needed, click **Disk Cost** to view your drives available and the required disk space and click **OK**.


ControlFLASH 12.00.00 Disk Space
The list below includes the drives you can install ControlFLASH to, along with each drive's available and required disk space.
Volume
Disk Size
Available
Required
C: 144GB 109GB 23MB
D: 146GB 125GB 0KB
E: 175GB 163GB 0KB
I: 1117GB 788GB 0KB
S: 1117GB 788GB 0KB
Y: 3352GB 1061GB 0KB
OK

11. In the Confirm Installation dialog box, to enable FactoryTalk Security, select the **Enable FactoryTalk Security** check box. You will be prompted to log on to FactoryTalk when starting ControlFLASH. Click **Next**.



12. When the installation is complete, select the **Yes, I want to launch ControlFLASH** to launch ControlFLASH after installation check box.



13. Click **Close** to complete the installation.

Configuring ControlFLASH Policy in FactoryTalk Policies

Introduction

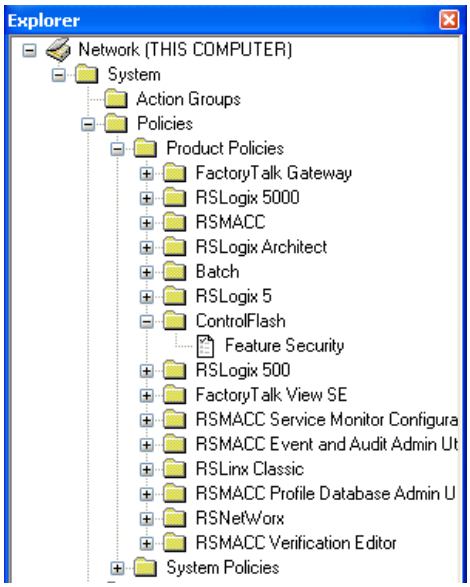
This chapter tells you how to configure ControlFLASH security policy in the FactoryTalk Administration Console.

IMPORTANT	The illustrations of the ControlFLASH software dialog boxes shown in this manual are samples. Because your system configuration is unique, the dialog boxes you see when running the tool may be different from the ones you see here.

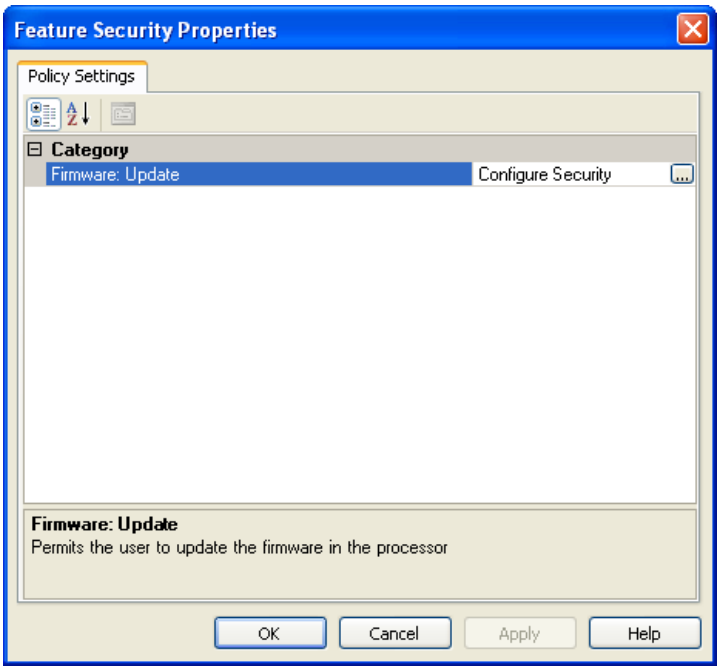
Configure ControlFLASH Policy

Follow this procedure to configure security policy on ControlFLASH.

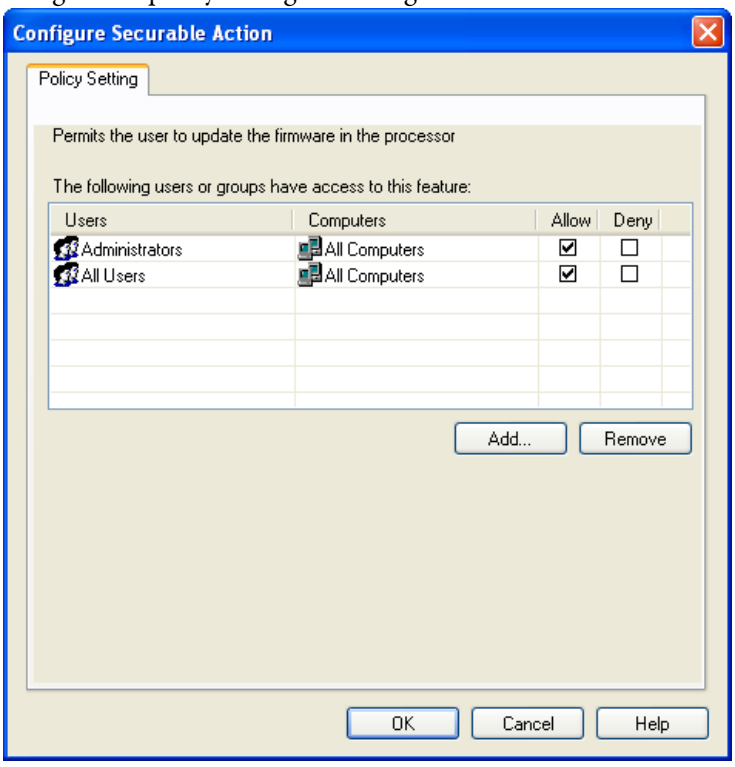
1. Open the FactoryTalk Administration Console.
2. In the Explorer area, expand **System > Policies > Product Policies > ControlFLASH**.



3. Double-click **Feature Security**. The Feature Security Properties window is displayed. Feature Security is included in FactoryTalk Services Platform 2.30 or later.



4. In the Firmware: Update category, click **Browse**. The Configure Securable Action window is displayed.
5. Configure the policy settings as RSLogix 5000 does.



6. Click **OK** to complete the configuration.

Upgrade Firmware with ControlFLASH

Introduction

This chapter tells you how to upgrade firmware by using the ControlFLASH software.

IMPORTANT	The illustrations of the ControlFLASH software dialog boxes shown in this manual are samples. Because your system configuration is unique, the dialog boxes you see when running the tool may be different from the ones you see here.

Before you begin, make sure that you have prepared your network and device for updating. If you need help, refer to the back cover of this publication for support information.

Prepare the Networks for Upgrades

Follow this procedure to prepare the network for updating.

ATTENTION: You cannot perform the upgrade while running a process. Before performing the upgrade, choose an appropriate time to remove your device from service.

1. Choose an appropriate time after all processes can be stopped to remove the device from service.
2. Shut down the production line only if the device does not support removal/insertion under power (RIUP).

   To verify that your device supports RIUP, check with the documentation that comes with your hardware. For Rockwell Automation products you can visit http://literature.rockwellautomation.com to obtain the latest documentation or contact your local distributor or Rockwell Automation representative.
3. Verify that all network devices are properly connected.

Prepare the Device for Upgrades

Follow this procedure to prepare the device for updating.

ATTENTION: Be sure to back up any data or programs that you have downloaded to a device. When you upgrade the firmware, all data and programs are erased.

1. Back up any current programs or data on the devices that you are updating.

2. Turn the key switch on your processor (if used) to Program mode.
3. Turn on power to the processor.

Use the ControlFLASH Software to Upgrade Firmware

Follow these steps to use ControlFLASH to upgrade the firmware on your devices.

1. Click **Start** > **All Programs** > **FLASH Programming Tools** > **ControlFLASH**. The Welcome to ControlFLASH dialog box appears.

Welcome to ControlFLASH
Welcome to ControlFLASH, the firmware update tool. ControlFLASH needs the following information from you before it can begin updating a device.
1. The Catalog Number of the target device.
2. The Network Configuration parameters (optional).
3. The Network Path to the target device.
4. The Firmware Revision for this update.
View Log
< Back
Next >
Cancel
Help

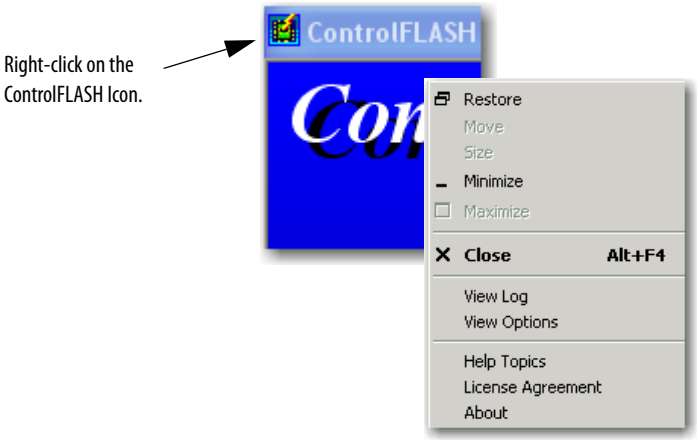
This dialog box tells you to be prepared with the following information:

- Catalog number of the target device
- Network configuration information (optional)
- Network path to the target device
- Firmware revision for this upgrade

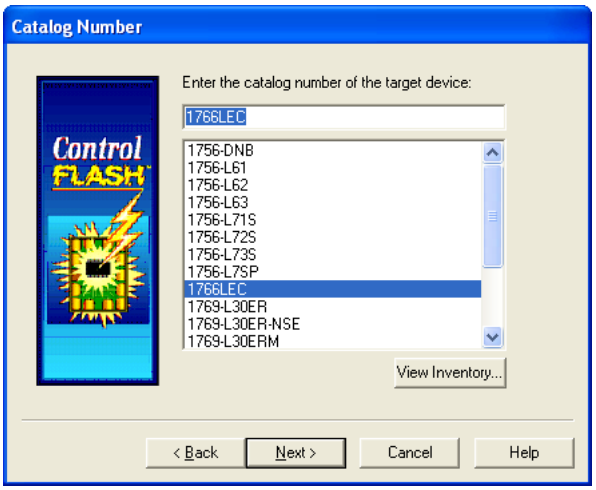
If you have selected the **Enable FactoryTalk Security** check box during installation, you will be prompted to select the FactoryTalk Directory. Select **Network** or **Local** and click **OK**.

If prompted to log on to FactoryTalk, enter your user name and passoword and click **OK**.

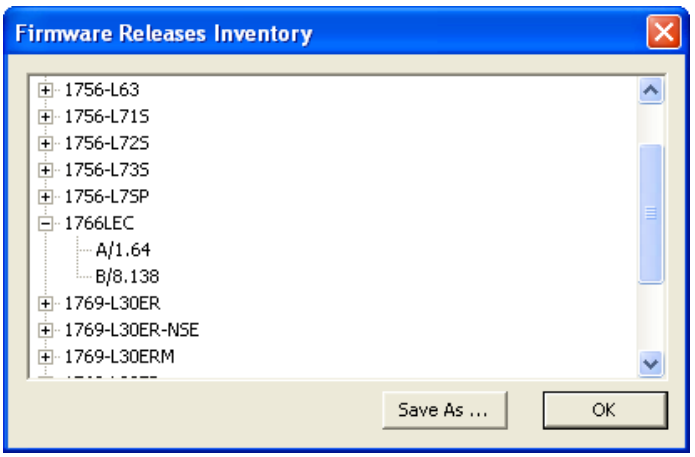
TIP A ControlFLASH menu is located in the upper left hand corner of the screen.



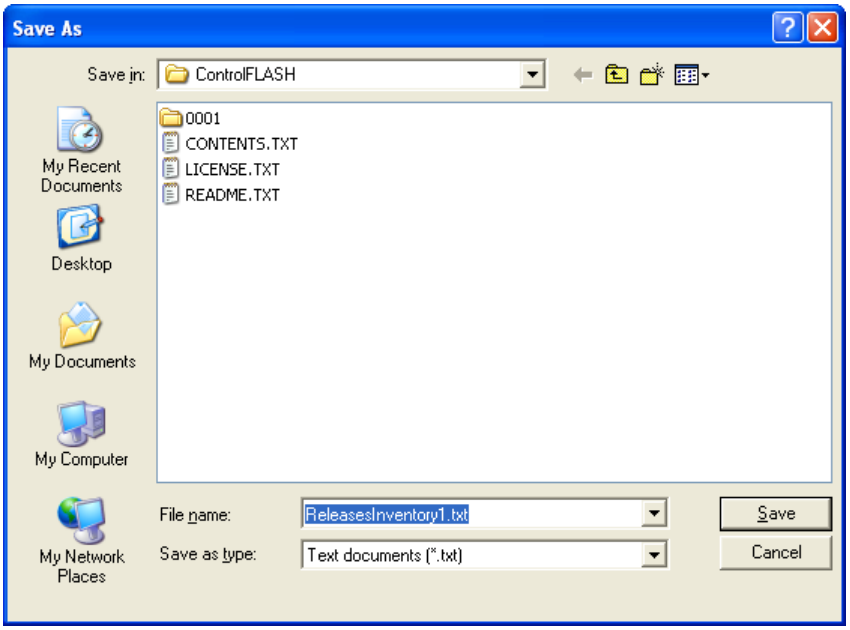
2. After you have the information, click **Next**.The Catalog Number dialog box appears.



3. Click **View Inventory**... to...



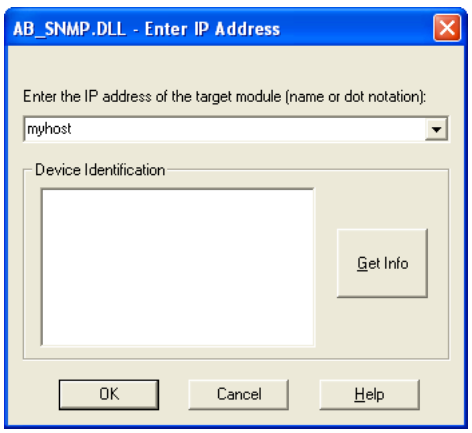
4.



5. Select the catalog number of the target device and click **Next**. The device path dialog box allows you to specify the network path of the target module you are updating. The dialog box varies depending on the target module you are updating.
   - If you are updating a device with MicroXA or AB_ASA protocol driver, the RSWho dialog box is displayed.

     To specify the network path, navigate to the network where the device is located and select the target module. Cick **OK** to go to the Firmware Revision dialog box.

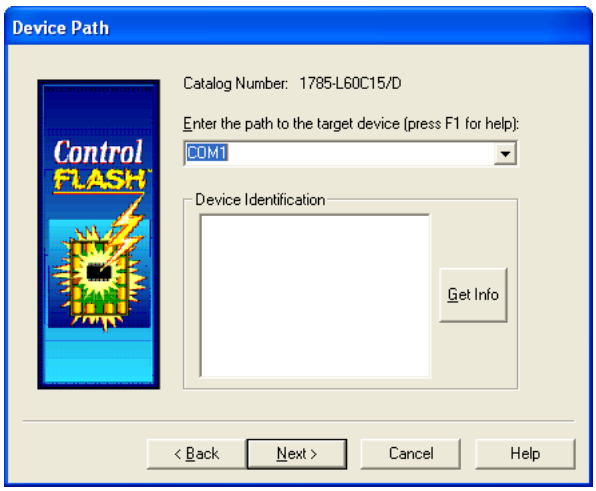
     For more information about configuring and using RSWho, refer to RSLinx help.
   - If you are updating a device with AB_SNMP protocol driver, the AB_SNMP.DLL - Enter IP Address dialog box is displayed.



To specify the network path, in the device path box, enter the IP address or host name of the target module. Cick **OK** to go to the Firmware Revision dialog box.

For more information about the device you are updating, click **Get Info**. The information is displayed in the Device Identification area. For more information about AB_SNMP protocol driver, click Help.

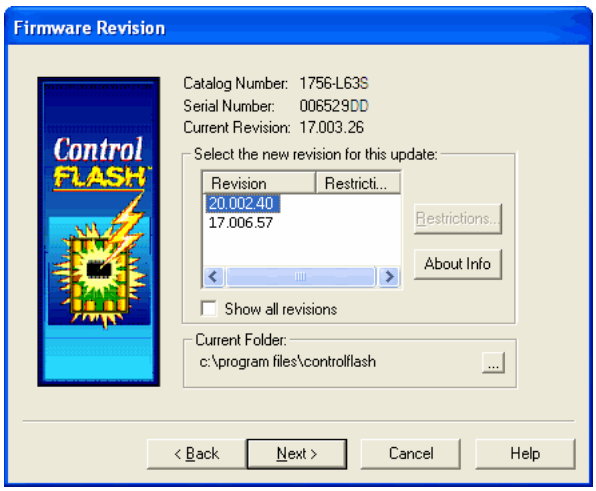
– If you are updating a device with AB_PLC5 protocol driver, the Device Path dialog box is displayed.



To specify the network path, in the device path box, enter the path in the box of the target module. Click **Next** to go to the Firmware Revision dialog box.

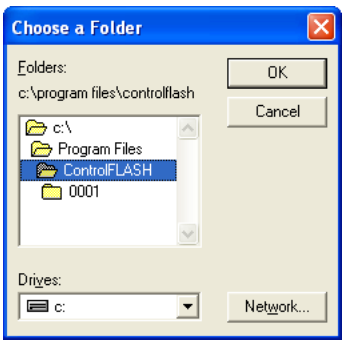
For more information about the device you are updating, click **Get Info**. The information is displayed in the Device Identification area.

6. In the Firmware Revision dialog box, do one of the following:



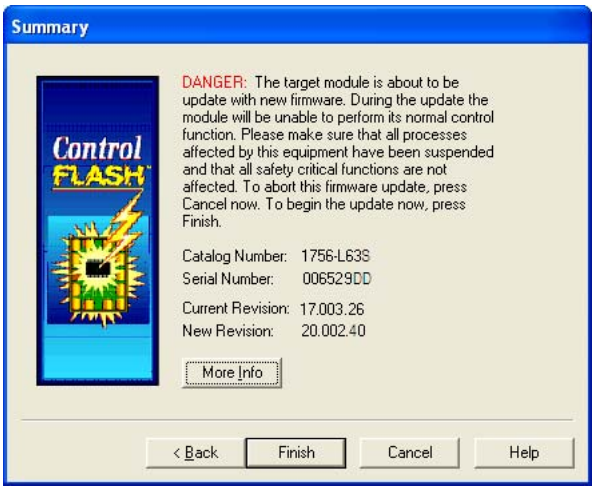
– To select a firmware revision, click the desired revision in the revision list.

– To see all available revisions that you can update to, select the **Show all revisions** check box.
– To locate another folder that contains the desired firmware revision, click **Browse** and select the desired folder.

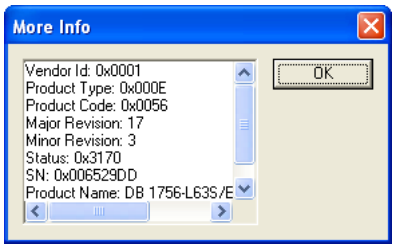


ATTENTION: Be sure that this upgrade is the correct one for your device. If not, an unpredictable system result could occur. Contact your technical support specialist for more information.

7. Click **Next** to go to the Summary dialog box.

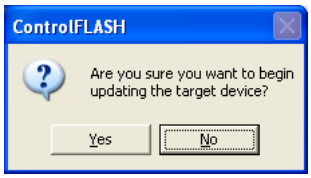

Summary
Control FLASH
DANGER: The target module is about to be update with new firmware. During the update the module will be unable to perform its normal control function. Please make sure that all processes affected by this equipment have been suspended and that all safety critical functions are not affected. To abort this firmware update, press Cancel now. To begin the update now, press Finish.
Catalog Number: 1756-L63S
Serial Number: 006529DD
Current Revision: 17.003.26
New Revision: 20.002.40
More Info
< Back
Finish
Cancel
Help

8. Click **More Info** to review more about the revision you selected, and click **OK** to close the dialog box.



IMPORTANT Be sure that this update is the correct one for your device. If not, an unpredictable system operation will result. Check with your technical support representative if you are unsure about making the update.

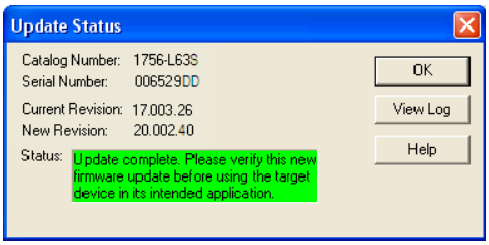
9. Click **Finish** when you are ready to upgrade the device.
10. Click **Yes** to continue with the update. The upgrade is in progress.



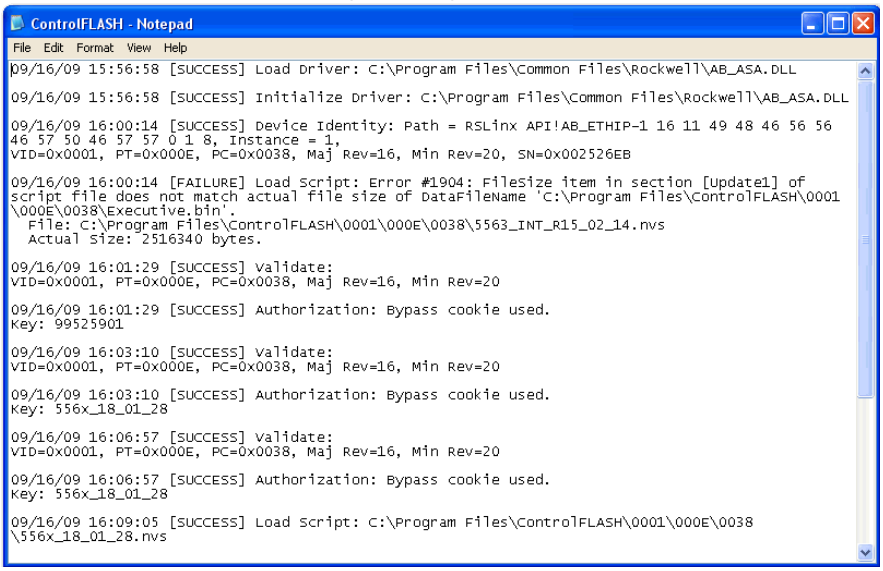
ATTENTION: If you are attempting to flash a CompactLogix L2***x*** or L3***x*** controller, it is extremely important to allow the upgrade to complete without interruption.

ATTENTION: Interrupting the upgrade at this point may result in an inoperable product. Make sure the upgrade is going without interruption.

11. After the upgrade, the **Update Status** dialog box appears..


Update Status
Catalog Number: 1756-L63S
Serial Number: 006529DD
Current Revision: 17.003.26
New Revision: 20.002.40
Status: Update complete. Please verify this new firmware update before using the target device in its intended application.
OK
View Log
Help

12. To view the history of programming events, click **View Log**.


ControlFLASH - Notepad
File Edit Format View Help
09/16/09 15:56:58 [SUCCESS] Load Driver: C:\Program Files\Common Files\Rockwell\AB_ASA.DLL
09/16/09 15:56:58 [SUCCESS] Initialize Driver: C:\Program Files\Common Files\Rockwell\AB_ASA.DLL
09/16/09 16:00:14 [SUCCESS] Device Identity: Path = RSLinx API!AB_ETHIP-1 16 11 49 48 46 56 56 46 57 50 46 57 57 0 1 8, Instance = 1,
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=16, Min Rev=20, SN=0x002526EB
09/16/09 16:00:14 [FAILURE] Load Script: Error #1904: FileSize item in section [Update1] of script file does not match actual file size of DataFileName 'C:\Program Files\ControlFLASH\0001\000E\0038\Executive.bin'.
File: C:\Program Files\ControlFLASH\0001\000E\0038\5563_INT_R15_02_14.nvs
Actual Size: 2516340 bytes.
09/16/09 16:01:29 [SUCCESS] Validate:
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=16, Min Rev=20
09/16/09 16:01:29 [SUCCESS] Authorization: Bypass cookie used.
Key: 99525901
09/16/09 16:03:10 [SUCCESS] Validate:
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=16, Min Rev=20
09/16/09 16:03:10 [SUCCESS] Authorization: Bypass cookie used.
Key: 556x_18_01_28
09/16/09 16:06:57 [SUCCESS] Validate:
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=16, Min Rev=20
09/16/09 16:06:57 [SUCCESS] Authorization: Bypass cookie used.
Key: 556x_18_01_28
09/16/09 16:09:05 [SUCCESS] Load Script: C:\Program Files\ControlFLASH\0001\000E\0038\556x_18_01_28.nvs

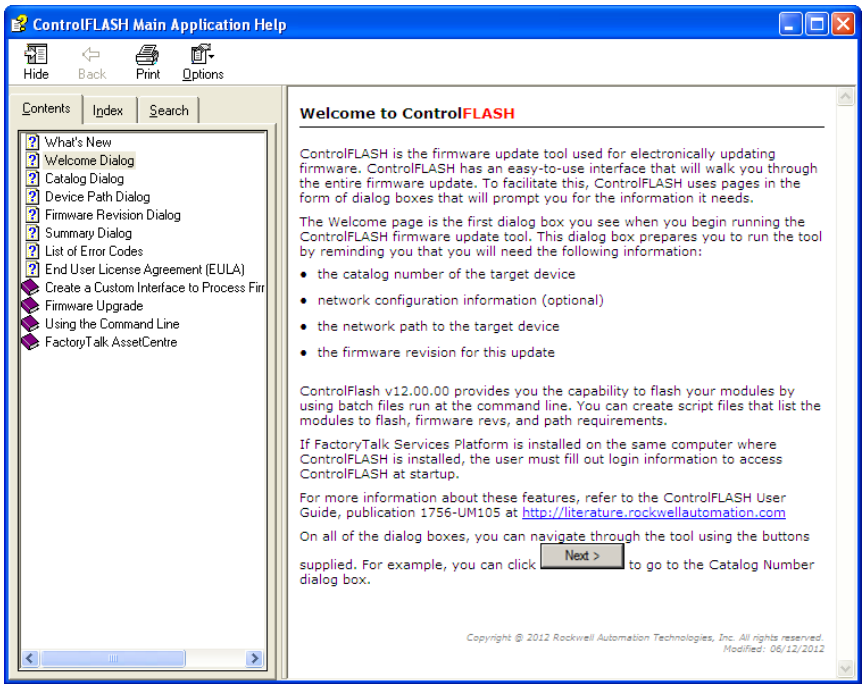
13. Click **OK** to complete the upgrade.

TIP If the upgrade does not complete successfully, refer to Appendix A of this manual for more information about errors.

IMPORTANT Test the operation of the device you upgraded before using it in its intended application.

Access Online Help

There is additional information in the online help for this application. Access help from the button that appears on each ControlFLASH software dialog box.


ControlFLASH Main Application Help
Hide
Back
Print
Options
Contents
Index
Search
What's New
Welcome Dialog
Catalog Dialog
Device Path Dialog
Firmware Revision Dialog
Summary Dialog
List of Error Codes
End User License Agreement (EULA)
Create a Custom Interface to Process Firr
Firmware Upgrade
Using the Command Line
FactoryTalk AssetCentre
Welcome to ControlFLASH
ControlFLASH is the firmware update tool used for electronically updating firmware. ControlFLASH has an easy-to-use interface that will walk you through the entire firmware update. To facilitate this, ControlFLASH uses pages in the form of dialog boxes that will prompt you for the information it needs.
The Welcome page is the first dialog box you see when you begin running the ControlFLASH firmware update tool. This dialog box prepares you to run the tool by reminding you that you will need the following information:
the catalog number of the target device
network configuration information (optional)
the network path to the target device
the firmware revision for this update
ControlFlash v12.00.00 provides you the capability to flash your modules by using batch files run at the command line. You can create script files that list the modules to flash, firmware revs, and path requirements.
If FactoryTalk Services Platform is installed on the same computer where ControlFLASH is installed, the user must fill out login information to access ControlFLASH at startup.
For more information about these features, refer to the ControlFLASH User Guide, publication 1756-UM105 at http://literature.rockwellautomation.com
On all of the dialog boxes, you can navigate through the tool using the buttons supplied. For example, you can click Next > to go to the Catalog Number dialog box.
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Modified: 06/12/2012

For additional information about error messages, press **F1** while the ControlFLASH software displays the error message.

Use the Command Line

Introduction

This chapter explains how to use the command line to update module firmware and simplify firmware management. You can flash mutiple modules automatically and save time because you do not need to navigate through the software and select each module to flash.

Using the command line to flash modules provides the following benefits:

- Create applications that flash upgrade groups of devices automatically without having to repeatedly use the ControlFLASH menus. These can be scripts or VB applications that list the modules to flash, the firmware revisions, and the path requirements.
- Reduce training requirements of technicians and improve time for commissioning machines or performing field upgrades.
- Leverage multi-threaded syntax to flash up to five modules simultaneously for improved performance.

Command Line Mode

You can use the command line interface of ControlFLASH for flashing devices without user intervention. You can write a script file or some other Windows applications that pass the required parameters to ControlFLASH software. This can significantly improve the time required to flash large systems because each individual flash action does not have to be driven through the ControlFLASH GUI interface.

Consider the following requirements for using the command line.

- Any device that you can flash with ControlFLASH software can be flashed by using the command line or scripting. You must have the proper firmware kit installed in ControlFLASH software before you use the command line or scripting.
- You must use valid catalog numbers when developing your script files. Otherwise, ControlFLASH does not recognize your modules. The only way to be sure you have the correct catalog number to include in a script is to run the GUI version of the ControlFLASH software and write down the catalog number as it is shown.
- For both the command line and script methods of flashing devices, it is required that a firmware kit containing the requested firmware revision is installed on the computer making the call to the ControlFLASH software. The firmware kits must be installed in the default installation folder for ControlFLASH: C:\Program Files\ControlFLASH.
- You must have a valid installation of ControlFLASH on the computer before you can flash by using the command line or scripting versions. You must also have the kits installed on that machine for the specific modules and firmware revisions you intend to flash.

Command Line Syntax

The following are the command line usages.

Syntax	Use

`ControlFlash.exe -C <Catalog> -R <Revision> -P <Path> [-K] [-S]`
If FactoryTalk Services Platform 2.30 or later is installed, the syntax above uses the following format:
`ControlFlash.exe -O -C <Catalog> -R <Revision> -P <Path> [-K] [-S]`
	Displays the full command line syntax.

`ControlFlash.exe -F <Filename>`	Points to command lines in a specific script file.
`ControlFlash.exe -I <Instance>`	Specifies the instance or port number of the device supporting multiple assemblies.
`ControlFlash.exe -?`	Displays the help information.

Table 1 - Parameter Options

Parameter	Description
-C	Catalog number of device as registered with the current installed ControlFLASH software. To identify installed kits, refer to the GUI version of ControlFLASH software. For example, -C 1756-L63/A
-R	Firmware revision you need to flash the device to. This revision must be registered for this device with the current install of the ControlFLASH software. To identify installed kits, refer to the GUI revision of ControlFLASH software. For example, -R 16.23
-P	FactoryTalk RSLinx path to the target device. -P AB_PCIC-1, 2 2 1 7 |_____| | | | |____Node address | | | |_____ Backplane | | |_____PCICS Communication card address | |_____ControlNet cable address |_____PCICS driver name -P AB_ETH-2,192.168.1.4,1,7 |_____| |_____| | |__Node Address | | |_____Backplane | |_____IP address |_____Ethernet driver name -P AB_DF1-1,0,1 |_||_____| | |_____CIP path to target device over DF1 driver |_____Parameter described CIP path to target device Example: Path = -P AB_DF1-1,0,1 -P AB_VBP-1,1,16 |_||_____| | |_____CIP path to target device over USB driver |_____Parameter described CIP path to target device Example: Path = -P AB_VBP-1,1,16
-F	Full path name to script file where target devices and options are specified. For example: -F MyScript.txt Refer to Script Files on page 30.
[-K]	Not including the -K parameter causes the device requested to flash, even if it is already at the same revision your moving the device to. Including the -K parameter skips the flash request if the target device's firmware is already at the requested firmware revision.
[-S]	Not including the -S parameter causes a second command window to open and displays progress on the current flashing activity. Including the -S parameter starts Silent mode, no progress status (percentage completion) or command window is displayed.
-I	The instance or port number of the device supporting multiple assemblies. The value should be between 0 and 15, for example, **-I 5**.
-?	Display help information.

Unless **Use single sign-on** in FactoryTalk Security Policy is enabled, ControlFLASH command-line mode does not support automatic logon without inputting the user name . You must manually specify the parameter of FactoryTalk Scope. See the parameter option defined in the Table below. If **Use single sign-on** is not selected, then ControlFLASH always prompts you to input the user name and password. This mechanism

is determined by FactoryTalk Services Platform instead of ControlFLASH..

Parameter	Description
- O Required	This parameter specifies FactoryTalk scope. Example: "-O Network" or "-O Local"

If FactoryTalk Services Platform is not installed on your machine, then parameter *O* is regarded as an invalid parameter with an error message *Invalid combination of switches* displayed on the screen and written to log file.

If a correct version of FactoryTalk Services Platform is installed, but you do not input parameter *O* in the command-line mode, then the message *Insufficient inputs, FactoryTalk Scope was not found*. is displayed on the command-line window.

You can use ControlFLASH.exe with the required and optional parameters at the command line:
C:\Program Files\ControlFLASH\Controlflash
followed by the appropriate parameters.

A status window is displayed to indicate the progress. Both the command line and scripting versions provide a switch ([-S]) option to disable this function and run in Silent mode.

ATTENTION: If you disable the status window, there will be no visual indication that a flash operation has failed or is in progress. In this case, Rockwell Automation recommends that you provide some other forms of user interaction through your own application, which indicates the status information.

Script Files

With ControlFLASH software, you can create script files or execute your own C#, Java, or other language to have the ControlFLASH software push firmware to your devices. Your application can interact directly with ControlFLASH software through a command line with status and diagnostics available in the ControlFLASH log or echoed back to your application directly.

Each device that you want to flash must have a unique Device#. ControlFLASH software begins flashing devices with [Device1], [Device2], and so forth. The software flashes the number of devices as indicated by the NumberDevices field. When you number your devices, do not skip a number and do not use [Device0]. The order of the file is not important, as long as each number exists once in the file. In this example, the NumberDevices is 4, so [Device5] will not be flashed.

Flash Multiple Devices

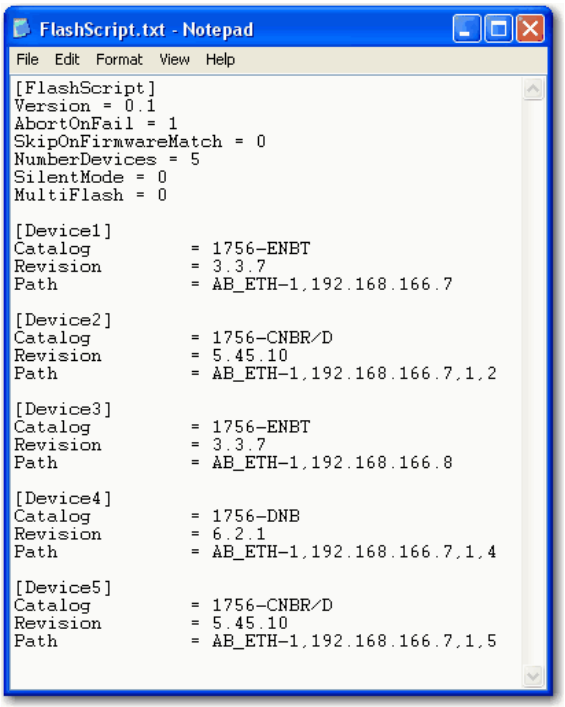
When creating a script file, there is a switch in the header that lets you flash up to five devices simultaneously.

ATTENTION: You should not use this option if flashing network or bridging type devices. ControlFLASH software may start flashing a network card that is currently being used as part of the path to flash other devices under that communication card. This could render the child device unusable and require the device to have to be returned to the factory.

ATTENTION: Use the Multi-flash mode only for devices that are not required to gain access to other parts of the architecture.

IMPORTANT When flashing a network communication device, for example, Ethernet, ControlNet, DeviceNet, SERCOS, always disable MultiFlash by setting it to 0.

When flashing I/O modules, enable the MultiFlash by setting it to 1.



Entry	Description
Version	Version of the script file.
AbortOnFail	When flashing a device failed: 0 = continue flashing the remaining devices. 1 = stop flashing the remaining devices.
SkipOnFirmwareMatch	If a device to flash already has the matching firmware as stated in the script: 0 = do not skip flashing the device. 1 = skip flashing the device.
NumberDevices	Flash the first # of devices in this script file, begin with [Device1].
SilentMode	0 = ControlFLASH console window appears on screen and shows the flash progress. 1 = ControlFLASH console window does not appear on screen. You will not receive any flash status feedback.
MultiFlash	0 = flash only one device at a time. 1 = flash up to five devices concurrently.
Catalog	Catalog number of device as registered with the current installed ControlFLASH software. To identify installed kits, refer to the GUI version of ControlFLASH software. For example: 1756-L63/A
Revision	Firmware revision you need to flash the device to. This revision must be registered for this device with the current install of the ControlFLASH software. To identify installed kits, refer to the GUI revision of ControlFLASH software. For example: 16.23
Path	FactoryTalk RSLinx path to the target device. AB_PCIC-1 2 2 1 7 |_____| | | | |____Node address | | | |_____Backplane | |__ _____PCICS Communication card address |_____ControlNet cable address |_____PCICS driver name AB_ETH-2,192.168.1.4,1,7 |_____| |_____| | |__Node Address | | |____ Backplane |_____IP address |_____ Ethernet driver name

Example Script File Text

```
[FlashScript]
Version = 0.1
AbortOnFail = 1
SkipOnFirmwareMatch = 0
NumberDevices = 4
SilentMode = 0
MultiFlash = 0
[Device1]
Catalog   = 1756-ENBT
Revision  = 3.3.7
Path      = AB_ETH-1,192.168.166.7,0 1,1
[Device2]
Catalog   = 1756-CNBR/D
Revision  = 5.45.10
Path      = AB_ETH-1,192.168.166.7,0 1,2
[Device3]
Catalog   = 1756-ENBT
Revision  = 3.3.7
Path      = AB_ETH-1,192.168.166.7,0 1,3
[Device4]
Catalog   = 1756-DNB
Revision  = 6.2.1
Path      = AB_ETH-1,192.168.166.7,0 1,4
[Device5]
Catalog   = 1756-CNBR/D
Revision  = 5.45.10
Path      = AB_ETH-1,192.168.166.7,0 1,5
```

Example Script File Text for Instance Number

```
[FlashScript]
Version = 0.1
AbortOnFail = 0
SkipOnFirmwareMatch = 0
NumberDevices = 1
SilentMode = 0
MultiFlash = 0
[Device1]
Catalog = PowerFlex 70
Revision = 2.9
Path = AB_ETH-1, 10.108.90.43
Instance = 1
```

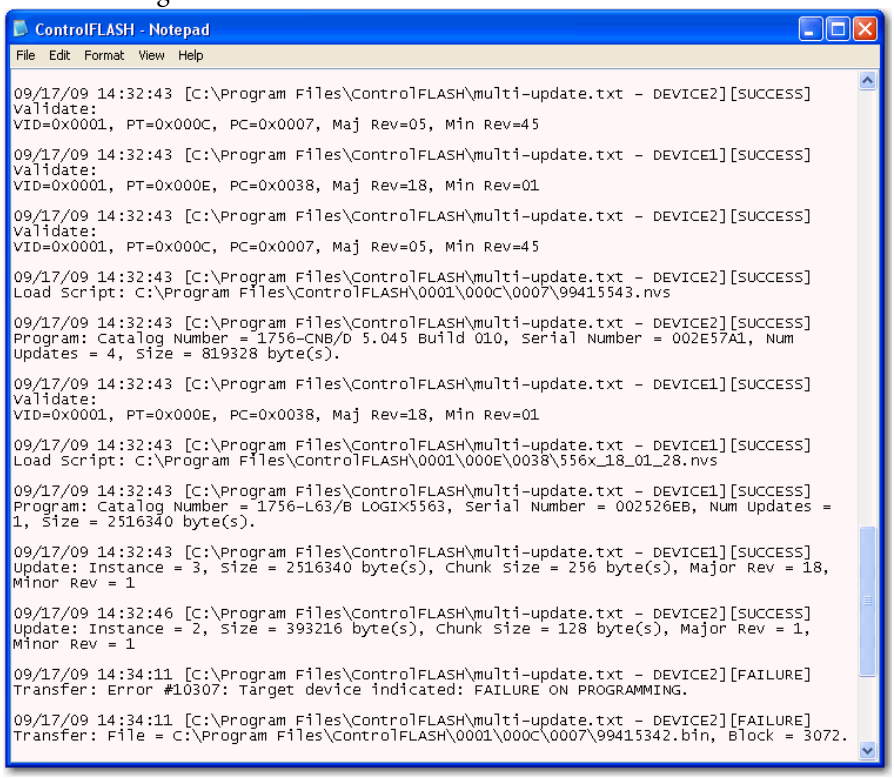
Troubleshooting

The first step to finding errors in your application is to use the ControlFLASH software log file. This file provides details about why your flashing script or command line request did not complete. This log file resides in the ControlFLASH directory. Before you spend a lot of time analyzing the log file however, make sure that you check the following:

- Target devices you are flashing have the correct firmware kit installed.
- ControlFLASH software has the correct RSLinx communication paths set up.
- The catalog number in your application matches the number in the ControlFLASH GUI.

Error Log

You can open the Error Log by clicking View Log on the ControlFLASH software dialog boxes.


ControlFLASH - Notepad
File Edit Format View Help
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][SUCCESS]
Validate:
VID=0x0001, PT=0x000C, PC=0x0007, Maj Rev=05, Min Rev=45
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE1][SUCCESS]
Validate:
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=18, Min Rev=01
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][SUCCESS]
Validate:
VID=0x0001, PT=0x000C, PC=0x0007, Maj Rev=05, Min Rev=45
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][SUCCESS]
Load Script: C:\Program Files\ControlFLASH\0001\000C\0007\99415543.nvs
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][SUCCESS]
Program: Catalog Number = 1756-CNB/D 5.045 Build 010, Serial Number = 002E57A1, Num
Updates = 4, Size = 819328 byte(s).
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE1][SUCCESS]
Validate:
VID=0x0001, PT=0x000E, PC=0x0038, Maj Rev=18, Min Rev=01
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE1][SUCCESS]
Load Script: C:\Program Files\ControlFLASH\0001\000E\0038\556x_18_01_28.nvs
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE1][SUCCESS]
Program: Catalog Number = 1756-L63/B LOGIX5563, Serial Number = 002526EB, Num Updates =
1, Size = 2516340 byte(s).
09/17/09 14:32:43 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE1][SUCCESS]
Update: Instance = 3, Size = 2516340 byte(s), Chunk Size = 256 byte(s), Major Rev = 18,
Minor Rev = 1
09/17/09 14:32:46 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][SUCCESS]
Update: Instance = 2, Size = 393216 byte(s), Chunk Size = 128 byte(s), Major Rev = 1,
Minor Rev = 1
09/17/09 14:34:11 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][FAILURE]
Transfer: Error #10307: Target device indicated: FAILURE ON PROGRAMMING.
09/17/09 14:34:11 [C:\Program Files\ControlFLASH\multi-update.txt - DEVICE2][FAILURE]
Transfer: File = C:\Program Files\ControlFLASH\0001\000C\0007\99415342.bin, Block = 3072.

Aborted Script File

If you have to abort a script file before completion or if the ControlFLASH software aborted the script because it received an error from a device, you can re-start that script. ControlFLASH starts flashing from the beginning of the script. You can, however, use the SkipOnFirmwareMatch switch to tell ControlFLASH software to not flash any devices that are already at the requested revision.

Stop a Command Line or Script Application

If you need to stop a flash operation that has already started, press CTRL+ALT+F. ControlFLASH stops executing the current script.

ControlFLASH completes flashing any devices currently in the process of being flashed to prevent risk of damaging the target device. Other modules not started in the script are not flashed.

If you are using your own interface to send commands to ControlFLASH, such as a script or C# application, pressing CTRL+ALT+F may not abort the operation and you must manage abort operations by using your application. Refer to the developer of that application for information on how to perform an abort.

ControlFLASH and Factory Talk AssetCentre Interaction

Introduction

ControlFLASH uses FactoryTalk AssetCentre to log user actions such as flashing a device or starting the application. The following information is included in the log:

- Windows credentials
- Device being flashed
- Path to the device being flashed
- Status of the operation

The following information is also available in the ControlFLASH log file, as it was in previous versions.

Information Monitoring

In FactoryTalk-enabled software products, information such as system events and user actions are recorded in the Event Log and Audit Log.

Event Log

The Event Log displays database information regarding events that occur in the system. Events are generally system-initiated. For example, an upload occurred as scheduled, or an alarm condition occurred. Only events that occur in FactoryTalk-enabled products are recorded in the Event Log.

Audit Log

The Audit Log displays database information regarding actions that users perform in the system, such as editing an RSLogix 5000 project or checking-out a file from the FactoryTalk AssetCentre database. Audit records are generated by FactoryTalk-enabled products.

FactoryTalk AssetCentre

FactoryTalk AssetCentre offers a centralized repository for tracking and auditing the changes made to a plant-wide system. Any information related to an application is logged in to the FactoryTalk AssetCentre server.

The details of the log usually contain the following fields:

- Date/Time
- User Name
- User Description (full user name, based on user information held in a security token or domain name; required for audit messages)
- Severity of message (error, warning, information, audit)
- Audience for message (operator, engineer, developer, FactoryTalk AssetCentre)
- Message text (text or resource ID that resolves to text when retrieved or passed between machine boundaries)
- Argument list (optional placeholders in message text)

Any additional details, apart from the basic fields listed here, can also be logged on to FactoryTalk AssetCentre server. For example, the *resource* field of the Audit log is not a part of the basic message format and is considered an additional field.

The following ControlFLASH activities are logged:

- Launch of ControlFLASH
- Flash burn started. Includes the following details:
  - Date/Time the flash began
  - Firmware Revision, both From and To
  - Username
  - Path to the device being flashed
  - Device Target Module Name and Identifier
- Flash Burn Status (Success/Failure)
- Exit of ControlFLASH

The ControlFLASH activities are logged only if the client is properly configured with FactoryTalk AssetCentre server. ControlFLASH logs the current windows user login. ControlFLASH software activities are logged into the log_AuditEventLog table of the FactoryTalk AssetCentre server.

If the connection between the client and server is lost while ControlFLASH is used, all of the events are cached into a local log and are then updated into FactoryTalk AssetCentre server when the connection resumes.

The connectivity of the client to FactoryTalk AssetCentre server, if present, is identified with the help of the following registry entry.

HKEY_LOCAL_MACHINE\SOFTWARE\Rockwell Software\FactoryTalk AssetCentreClient\EventLog

Key- Server

Value- (Server Name)

This registry search is done during the launch of the ControlFLASH application.

Logging the Device Update Status

The update status (Success or Failure) is logged into the FactoryTalk AssetCentre server. You can view the reasons for the Success or Failure in the ControlFLASH log. The status of the update process is logged into FactoryTalk AssetCentre with the following details:

Field	Description
Date and Time	Date and Time at which the update process has finished for the device.
Source	Application name, for example, ControlFLASH
Location	Computer name on which ControlFLASH is being executed.
Resource	Name of the resource that is ControlFLASH.
Username	FTAssetSecurity Login, if present, else Windows login
Message Text	If update succeed: The device "device name" is SUCCESSFULLY updated from version "x.x" to "y.y" and the path to the device being flashed is "device path. If update failed: The update process of the device "device name" from version x.x to y.y FAILED and the path to the device being flashed is "device path.

Logging the Exit of ControlFLASH

When you exit ControlFLASH, a message is created and logged into the FactoryTalk AssetCentre Event Log with the following details.

Field	Description
Date and Time	Date and Time at which ControlFLASH application is closed.
Source	Application name, for example, ControlFLASH
Location	Computer name on which ControlFLASH is closed.
Resource	Name of the resource, for example, ControlFLASH.
Username	FTAssetSecurity Login, if present, otherwise Windows login.
Message Text	ControlFLASH application closed.

ControlFLASH Software Error Codes

Introduction

This appendix describes common error messages you may see when running the ControlFLASH software.

Error Message	Description
Log Viewer Error The event log viewer (Notepad.exe) could not be found	Verify that the Notepad application is installed on your system.
Catalog Registry Error	The catalog registry database could not be read. Check with your technical support representative to verify that the correct database is loaded.
Load Driver Error	The ControlFLASH software could not find an essential support file for the selected catalog number. Check with your technical support representative to verify that the correct drivers is loaded.
Invalid Catalog Number	The catalog number of the target device you selected does not match the catalog number selected in the Catalog Number dialog box. You selected an incorrect target device or catalog number. Select a device that matches the catalog number or a different catalog number
Catalog Directory Error	The catalog directory database could not be read. Check with a technical support representative to verify that the correct catalog database has been loaded.
Invalid Revision	The upgrade revision selected is not compatible with the selected target device. The selected firmware revision is either: • older than the firmware currently on the target device. • incompatible with the revision level of the target device. **ATTENTION:** Do not continue with the upgrade until you have verified that the upgrade is compatible with the selected device. Unpredictable system operation could result.
Instance Validation Error	The target device did not report enough information to be properly identified. Check with a technical support representative for help in resolving this problem.
Script File Error	The script file associated with the selected upgrade is corrupt. Check with a technical support representative to obtain a new script file.
Data File Error	The data file used in programming could not be read. Check with a technical support representative to obtain a new data file.
Out of Memory Error	Your system is low on or out of RAM memory. The ControlFLASH software could not allocate enough memory for data. Free up RAM space by: • Shutting down other applications currently running. • Increasing the size of your virtual memory. • Purchasing additional RAM, if necessary.

Error Message	Description
Out of Memory Error Log File Error	The log file could not be accessed because of a file error. Either the log file could not be: • Opened. • Written to because of an error. • Written to because the disk is full. **ATTENTION:** Check with your application engineer or supervisor before deleting any files. Verify that you are not deleting any files necessary for system operation. If the disk is full, you can free up disk space by: • Deleting files from your c:\windows\temp directory. • Uninstalling any unnecessary applications. • Shutting down and restarting your computer.
Authenticate Error	The download restrictions placed on the selected revision could not be validated. Files containing validation information are corrupted or have been deleted. Check with a technical support representative for help in restoring your restriction files.
Restriction System Error	The download restriction system could not read the master key disk. Check with a technical support representative for help in resolving this problem.
RSLinx Load Error	An error occurred while the ControlFLASH software tried to install the network protocol driver (DTL32.DLL). Verify that RSLinx Classic software is properly installed and configured.
Communication Error	An error occurred while the ControlFLASH software tried to communicate with the target device. Verify that: • All cable connections are secure. • The target device has power. • RSLinx Classic software is properly configured.
Mode Error	The target device is in a mode in which it cannot be programmed. Place the device into the appropriate mode.
Failed to communicate to the target device. You do not have the permission to perform this operation.	The error might be caused because that: • The security authority identifier of the target device does not match the identifier in FactoryTalk Services Platform. Make sure you have the permission to perform the operation. • The slot used for the controller is not a trusted slot. Make sure to use a trusted slot for the controller.

Create a Custom Interface to Process Firmware Downloads

Introduction

This chapter gives you an overview on how you can create a custom interface to batch process firmware downloads.

As discussed in previous chapters, you can automate firmware flashing by using a text file that lists devices and single command line. Create a text file that lists all the devices to be flashed and then use a single command line to flash everything on the list.

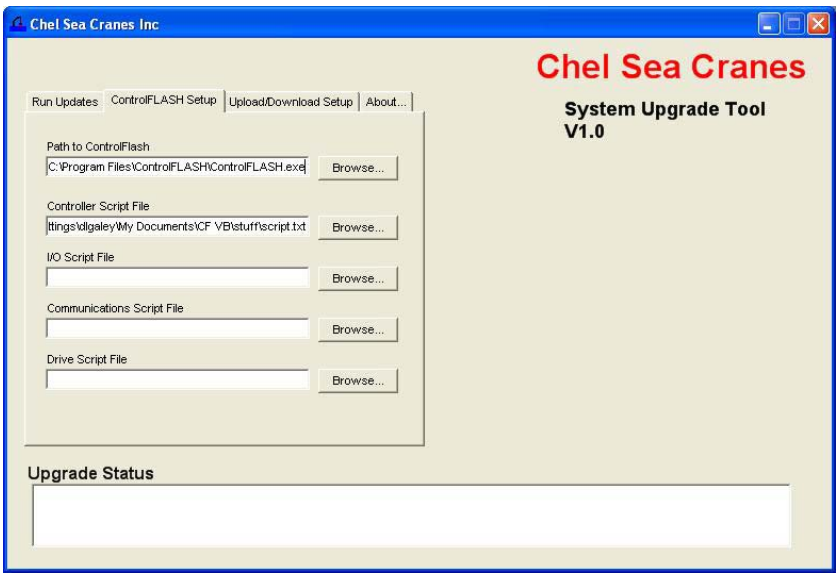
This functionality provides the following benefits:

- Flash groups of devices automatically, without having to repeatedly use the ControlFLASH menus.
- Create your own applications that automates firmware upgrades.

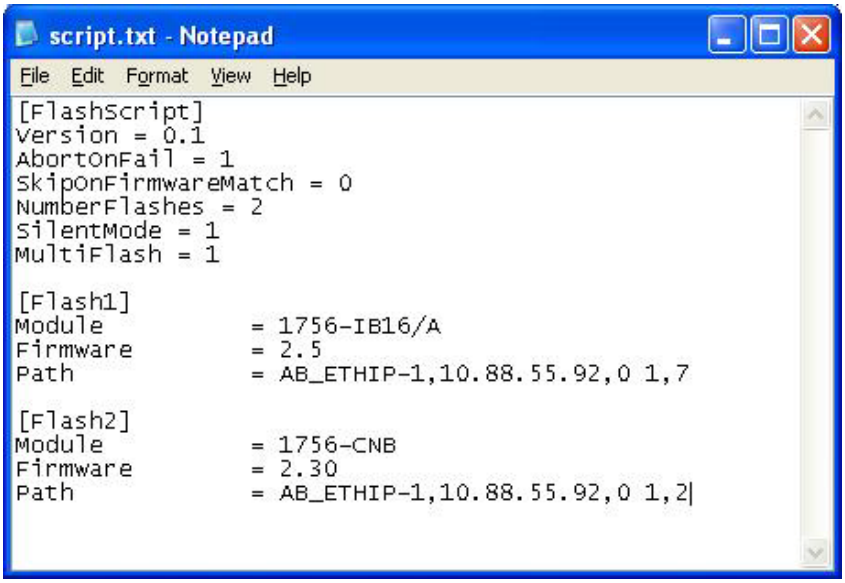
Example Automated Flash Tool

The following example application represents a tool that you might want to create to configure ControlFLASH to read the text file at a command line that automates your system upgrades. This tool was created with Visual Basic .NET.

In this type of custom tool, select the ControlFLASH Setup tab.

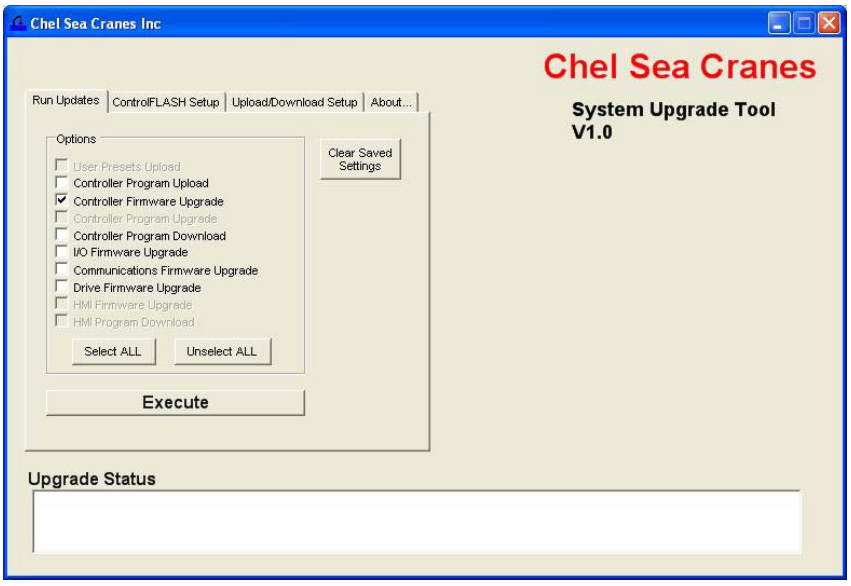


Using the fields created, specify the path to the ControlFLASH executable, as well as the text script files you want to use.

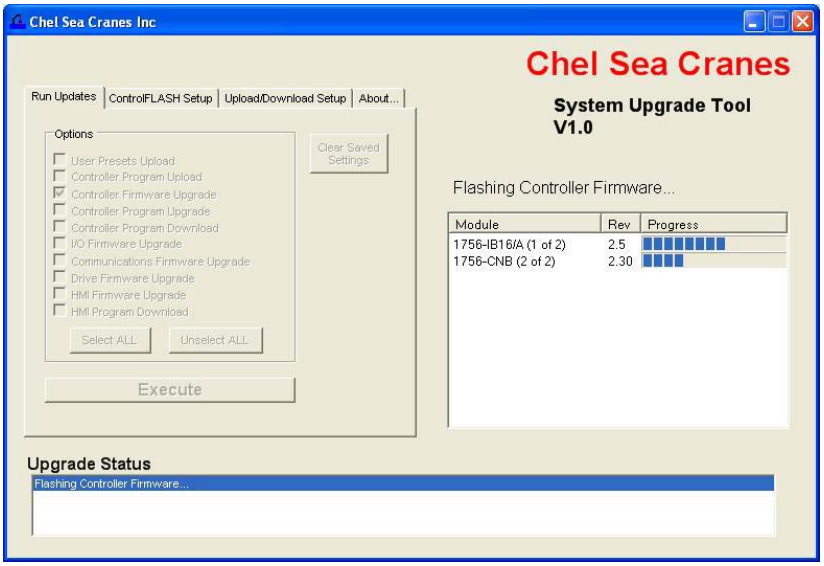


This example uses separate script files to flash controllers, I/O modules, communication modules, and drives, but it is not required that they be separated.

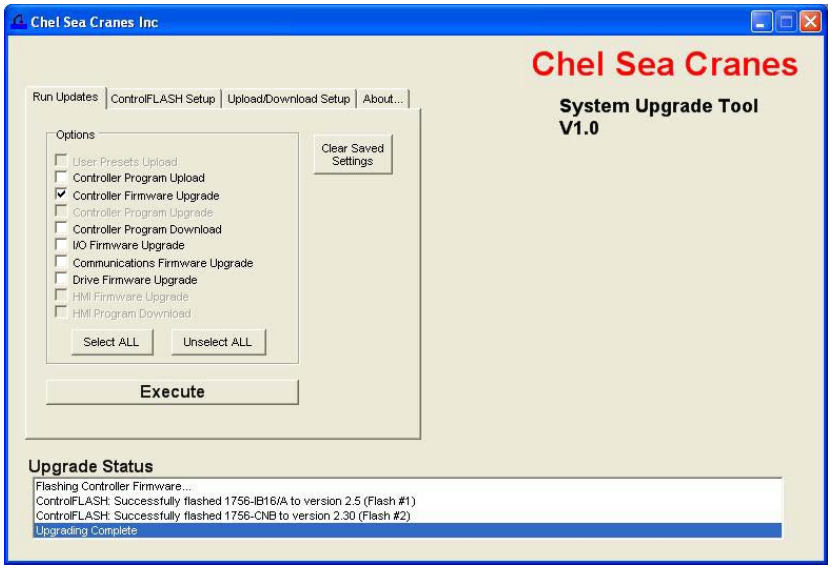
Assuming that the location of the executable and the script files do not change, these configurations need to be set only once. After configuration completes, click the **Run Updates** tab and select the actions that you want to perform, which include four boxes for the four different script files. Click **Execute** to run the selected actions.



While modules are flashing, the tool displays the progress on the right hand side of the window and success or failure messages in the status box at the bottom.



Once all selected upgrades are run, the status box shows the overall completion status.



How a Custom Upgrade Tool Works

The tool in this example was created using Visual Basic .net, but any major programming language can be used. The script files are created manually in a text editor. The tool itself first reads the script file to get the number of devices being flashed, including the names and revision numbers. The tool uses this information to form the display.

The tool then uses the System.Diagnostics.Process.Start function of the .NET framework to launch ControlFLASH software, giving as the arguments the path to the script file with a -T flag in front of it.

Example:

```
fileName = "C:\Program Files\ControlFLASH\ControlFLASH.exe"
arguments = "-T C:\samplescript.txt"
```

The tool then monitors the ControlFLASH process to detect when it has finished running so the tool can move on to the next step.

The easiest way to view the status of the flash upgrade by using this method is to edit the ControlFLASH script file and set SilentMode = 0 to use ControlFLASH software's built in status display.

If developers want to show the progress themselves, as the example tool does, they can use the registered window messages to show progress with external applications. Some knowledge of Microsoft Windows messages is needed.

ControlFLASH registers two Windows messages: WM_CFPROGRESS and WM_CFCOMPLETE. The WM_CFPROGRESS message is sent whenever ControlFLASH needs to report a change in progress of flashing a device. The WM_CFCOMPLETE message is sent whenever ControlFLASH finishes flashing a device. These messages can be received by any application that also registers messages of the same name.

Refer to MSDN: http://msdn.microsoft.com/en-us/library/ms644947(VS.85).aspx where lpString is WM_CFPROGRESS or WM_CFCOMPLETE

Example Visual Basic .NET Code

```
Private Declare Function RegisterWindowMessage Lib "user32" Alias
"RegisterWindowMessageA" _

(ByVal lpString As String) As Integer

Dim WM_CF_PROGRESS As Integer =
RegisterWindowMessage("WM_CFPROGRESS")

Dim WM_CF_COMPLETE As Integer =
RegisterWindowMessage("WM_CFCOMPLETE")
```

WM_CF_PROGRESS and WM_CF_COMPLETE are simply variable names used to store the integer values associated with the messages.

After registering the two messages, an application must override the form's WndProc method to actually listen for these messages

For more information, see MSDN: http://msdn.microsoft.com/en-us/library/system.windows.forms.form.wndproc(VS.71).aspx

Example:

```
Protected Overrides Sub WndProc(ByRef recWinMessage As
Windows.Forms.Message)
```

In WndProc, you first need to determine if the message received is one of the two registered ones. This is done by checking (in this example):

recWinMessage.Msg = WM_CF_PROGRESS (as defined in the above example) or recWinMessage.Msg = WM_CF_COMPLETE

Assuming the message is one of the two, the details of what the message means are as follows:

- If the message is WM_CFPROGRESS:

  `recWinMessage.WParam.ToInt32` is the number of the device currently being flashed. These numbers should correspond to the numbers listed in the script file

  `recWinMessage.LParam.ToInt32` is the actual progress of the current device (as a percentage).

Because of the way the system is designed, if recWinMessage.LParam.ToInt32 is 100, that does not mean the flashing of that device is complete. Flashing is only complete when the WM_CFCOMPLETE message is sent.

- If the message is WM_CFCOMPLETE:

  `recWinMessage.WParam.ToInt32` is still the number of the device

  `recWinMessage.LParam.ToInt32` indicates success or failure. If the value is 1, the flash succeeded; if 0, it failed.

For more information, see MSDN http://msdn.microsoft.com/en-us/library/system.windows.forms.message_members(VS.71).aspx

In this tool, the progress messages are used to set the values of the progress bars, and the complete messages are used to trigger the success and failure status messages in the lower status box.

IMPORTANT	At the end of your override of the WndProc method, you must call the base class' WndProc method to handle any other messages sent, or your application will not work. Example: MyBase.WndProc(recWinMessage) End Sub

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